Claims

1. A gas generator for an air bag, comprising a housing having a gas discharge port, and an ignition means to be actuated by the impact and a gas generating means which is to be ignited and burnt by the ignition means for generating a combustion gas to inflate an air bag, the ignition means and the gas generating means stored in the housing, wherein two combustion chambers which store gas generating means and further a communication hole which allows mutual communication between the respective combustion chambers are provided in the housing, and the communication hole is closed by a metal thin plate having the tensile strength of 15 kg/mm^2 or more and the thickness of 10 to 200 μm.

2. A gas generator for an air bag according to claim 1, wherein two combustion chambers storing gas generating means are provided concentrically to be adjacent to each other in the radial direction of the housing, and a communication hole is further provided to allow mutual communication between the respective combustion chambers.

3. A gas generator for an air bag, comprising a housing formed in a cylindrical shape having the axial length longer than the outermost diameter thereof and

having a plurality of gas discharge ports in the circumferential wall thereof, and an ignition means to be actuated by the impact and a gas generating means which is to be ignited and burnt by the ignition means for generating a combustion gas to inflate an air bag, the ignition means and the gas generating means stored in the housing, wherein two combustion chambers storing the gas generating means are provided concentrically to be adjacent to each other in the axial direction and/or in the radial direction of the housing, and further a communication hole which allows mutual communication between the respective combustion chambers is provided in the housing, and the communication hole is closed by a metal thin plate having the tensile strength of 15 kg/mm^2 or more and the thickness of 10 to 200 μm.

4. A gas generator for an air bag according to any one of claims 1 to 3, wherein the thickness of a metal thin plate is in the range of 20 to 100 μm.

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~~5. A gas generator for an air bag according to any~~ one of claims 1 to 4, wherein combustion gases generated due to the combustion of the gas generating means stored in two combustion chambers reach a gas discharge port through different flow paths for the respective combustion chambers, and the gas generating means

stored in one combustion chamber is never ignited directly by the combustion gas generated in the other combustion chamber.

6. A gas generator for an air bag according to claim 5, wherein a flow-path forming member is arranged in the housing to form a flow-path, and the combustion gas of one combustion chamber is introduced directly into a coolant means.

7. A gas generator for an air bag, comprising a housing having a gas discharge port, an ignition means including an igniter to be actuated by the impact and a transfer charge, and a gas generating means which is to be ignited and burnt by the ignition means for generating a combustion gas to inflate an air bag, the ignition means and the gas generating means stored in the housing, wherein, in the ignition means, a flame discharge portion of the igniter and the transfer charge face each other at least partially, and an area ratio (A/B) of an area (A) of the flame discharge portion to an area (B) of the transfer charge is set to 0.005 to 0.3.

8. A gas generator for an air bag according to claim 7, wherein the area ratio (A/B) is in the range of 0.01 to 0.3.

9. A gas generator for an air bag according to

claim 7, wherein the area ratio (A/B) is in the range of 0.01 to 0.1.

10. A gas generator for an air bag according to any one of claims 7 to 9, wherein, in the ignition means, the igniter itself is made so small that said area ratio (A/B) may be obtained.

11. A gas generator for an air bag according to any one of claims 7 to 9, wherein, in the ignition means, a top surface of the igniter is covered with a cup having one or two or more holes, so that said area ratio (A/B) is obtained.

12. A gas generator for an air bag according to any one of claims 7 to 9, wherein, in the ignition means, such a structure is employed that the flame is discharged only from a portion corresponding to the flame discharge portion of the igniter or preferentially from a portion corresponding to the flame discharge portion, so that the area ratio (A/B) is obtained.

13. A gas generator for an air bag according to claim 12, wherein at least a top surface of the igniter is covered with a cover member, and the flame is discharged only from a portion of the cover member corresponding to the flame discharge portion of the igniter or preferentially from the portion

corresponding to the flame discharge portion.

~~14. A gas generator for an air bag according to~~ any one of claims 7 to 13, comprising a housing having a gas discharge port, an ignition means including an igniter to be actuated by the impact and a transfer charge, and a gas generating means which is to be ignited and burnt by the ignition means for generating a combustion gas to inflate an air bag, the ignition means and the gas generating agent stored in the housing, wherein, in the ignition means, the igniter and the transfer charge are exactly opposite to each other in the radial direction and they are arranged so as to be separated from each other, and/or a flame-transferring hole communicating with the combustion chamber and the transfer charge are arranged so as not to be exactly opposite to each other in the radial direction of the ~~housing.~~

15. A gas generator for an air bag, comprising a housing having a gas discharge port, and an ignition means to be actuated by the impact and a gas generating means which is to be ignited and burnt by the ignition means for generating a combustion gas to inflate an air bag, the ignition means and the gas generating agent stored in the housing, wherein the ignition means includes an igniter and a transfer charge in an ignition

means accommodating chamber, and the charge density of the transfer charge is in the range of 0.1 to 5 g/cm^3.

16. A gas generator for an air bag, comprising a housing having a gas discharge port, and an ignition means to be actuated by the impact and a gas generating means which is to be ignited and burnt by the ignition means for generating a combustion gas to inflate an air bag, the ignition means and the gas generator stored in the housing, wherein the ignition means includes an igniter and a transfer charge in an ignition means accommodating chamber, the charge density of the transfer charge is in the range of 0.1 to 5 g/cm^3, and a ratio [(A + B)/A] of a volume (A) of the space where the transfer charge occupies inside the ignition means accommodating chamber and the volume (B) of the remaining space in the ignition means accommodating chamber is in the range of 1.05 to 20.

17. A gas generator for an air bag according to claim 15 or 16, wherein a transfer charge is stored in a transfer charge accommodating chamber provided independently inside the ignition means accommodating chamber.

18. A gas generator for an air bag according to claim 15, 16 or 17, wherein two or more combustion chambers storing the gas generating means are arranged

~~in the housing, and two or more ignition means for igniting and burning the respective gas generating means are arranged in the two or more combustion chambers.~~

19. A gas generator for an air bag comprising a housing having a gas discharge port, and an ignition means to be actuated by the impact and a gas generating means which is to be ignited and burnt by the ignition means for generating a combustion gas to inflate an air bag, the ignition means and the gas generating means stored in the housing, wherein the respective gas generating means are stored in the housing, a first combustion chamber and a second combustion chamber with a communication hole for allowing communication between the chambers are also provided in the housing, the communication hole between the first combustion chamber and the second combustion chamber is closed by a plurality of metal thin plates layered through an adhesive.

20. A gas generator for an air bag according to claim 19, wherein the metal thin plates are layered in a non-flat state.

~~21. A gas generator for an air bag according to claim 19 or 20, wherein the total thickness of a plurality of metal thin plates layered except for the~~

adhesive is in the range of 10 to 200 μm.

22. A gas generator for an air bag according to claim 19, 20 or 21, wherein the thickness of each metal thin plate is in the range of 5 to 100 μm.

23. A gas generator for an air bag according to any one of claims 19 to 22, wherein the thickness of a first adhesive layer provided on a contacting surface between a peripheral edge portion of the communication hole and a first metal thin plate is in the range of 10 to 50 μm.

24. A gas generator for an air bag according to any one of claims 19 to 23, wherein the thickness of a second adhesive layer provided on a contacting surface between the first metal thin plate and a second metal thin plate is in the range of 10 to 50 μm.

25. A gas generator for an air bag according to any one of claims 19 to 24, wherein the communication hole is closed by the metal thin plate from the side of the inner wall of the first combustion chamber.

26. A gas generator for an air bag, comprising a housing having a gas discharge port, and an ignition means to be actuated by the impact and a gas generating means which is to be ignited and burnt by the ignition means for generating a combustion gas to inflate an air bag, the ignition means and the gas generator stored

in the housing, wherein the gas generator has at least one selected from the following requirements (1), (2), (3) and (4):

(1) Two combustion chambers which accommodate gas generating means respectively are provided in the housing, and a communication hole which allows mutual communication between the respective combustion chambers is further provided, and the communication hole is closed by a metal thin plate having the tensile strength of 15 kg/mm^2 or more and the thickness of 10 to 200 μm;

(2) A gas generator for an air bag comprising an ignition means including an igniter and a transfer charge, and a gas generating means which is to be ignited and burnt by the ignition means for generating a combustion gas to inflate an air bag, wherein a flame discharge portion of the igniter and the transfer charge face each other at least partially in the ignition means, and an area ratio (A/B) of the area (A) of the flame discharge portion to the area (B) of the transfer charge is 0.005 to 0.3;

(3) An ignition means including an igniter and a transfer charge in an ignition means accommodating chamber, wherein the charged density of the transfer charge is 0.1 to 5 g/cm^3; and

(4) A first combustion chamber and a second combustion chamber, which accommodate gas generating means respectively and have a communication hole allowing mutual communication between the chambers, are provided in the housing, and the communication hole between the first combustion chamber and the second combustion chamber is closed by a plurality of metal thin plates laminated through an adhesive.

27. ~~An air bag apparatus comprising a gas~~ generator for an air bag, an impact sensor which senses the impact to actuate the gas generator, an air bag to which the gas generated in the gas generator is introduced to be inflated, and a module case which stores the air bag, wherein the gas generator for an air bag is the gas generator for an air bag according ~~to any one of claims 1 to 26.~~